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ABSTRACT

Investigated were the effects of two types of stimuli, preferred and non-preferred, on the free recall and clustering of 16 moderately and severely retarded children (mean IQ = 39.12, mean CA = 10.84 years) who were enrolled in public schools. An empirical determination was made as to whether to classify a particular conceptual category of stimuli as preferred or non-preferred. All Ss were presented with 18 objects from six conceptual categories in blocked condition. Both the preferred and non-preferred stimuli were given to each S in a counterbalanced order using a repeated measures design. The major finding was that the use of preferred stimuli had a significant facilitating effect on recall but not clustering. (Author)

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BRIEF REPORT

The Effects of Preferred Stimuli on the Free Recall of Moderately and Severely Mentally Retarded Children

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Running head: Effects of Preferred Stimuli on Free Recall

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Abstract

The present study investigated the effects of two types of stimuli, preferred and non-preferred, on the free recall and clustering of 16 moderately and severely retarded children who were enrolled in public schools (mean IQ = 39.12, SD = 6.08; mean CA = 10.84 years, SD = 1.55). An empirical determination was made as to whether to classify a particular conceptual category of stimuli as preferred or non-preferred. All subjects were presented with 18 objects from 6 conceptual categories in blocked condition. Both the preferred and non-preferred stimuli were given to each subject in a counterbalanced order using a repeated measures design. The major finding of this study was that the use of preferred stimuli had a significant facilitating effect on recall but not clustering.

The Effects of Preferred Stimuli on the Free Recall of Moderately and Severely Mentally Retarded Children

Characteristics of stimulus material may influence free recall performance. Ellis, McCarver and Ashurst (1970) used two types of stimuli in a short-term memory task with the retardates -- high-meaningful (pictures of common objects which were easily verbally labeled) and low-meaningful (nonsense shapes which were difficult to label) -- and expected the former to enhance recall performance. While in this one study meaningfulness was found to have no significant effect, one may raise the question as to whether learning could be facilitated by stimulus material which is preferred by the subject thus leading to enhanced recall. Preferred stimulus material is defined here as subject matter interested and desired by subject. In the present study, the effects of preferred stimuli on free recall performance of moderately and severely mentally retarded children were investigated.

In order to maximize the learning condition, presentation methods were incorporated which have proven effective in inducing organizational tendencies in recall. It has been empirically demonstrated that retardates' performance improves (1) when stimulus words from the same conceptual category are presented consecutively (Gerjuoy & Spitz, 1966); (2) when familiar objects are presented simultaneously rather than sequentially (McConkey & Green, 1973; McConkey & Herriot, 1973); and (3) when category labels of stimulus words are supplied at presentation (Gerjuoy & Alvarez, 1969; Gerjuoy & Spitz, 1966). All the previously cited studies were concerned with educable mentally retarded; in the present study free recall performance of moderately and severely retarded children was investigated.

Method

Subjects

The subjects were 16 moderately and severely mentally retarded children enrolled in public schools of a large metropolitan city (mean IQ = 39.12, SD = 6.08; mean CA = 10.84 years, SD = 1.55). None of the subjects had severe gross-motor defects and they all possessed minimal expressive language.

Materials

The stimulus materials were two sets of 9 familiar objects; one was designated preferred and the other, non-preferred. The designation was established empirically by (a) requesting each of the 16 subjects of this study to select the objects he wanted to have, in order of preference, from an array of 30 common classroom objects which these subjects had already correctly labeled; (b) tabulating rank order and frequency of choices; and (c) selecting the 9 most frequently chosen objects as preferred items and the 9 least frequently chosen as non-preferred items. The experimenters then grouped each set of 9 objects into three conceptual categories: preferred -- food (raisin, M&M, gum), toy (ball, ballon, puppet), and things to write with (chalk, crayon, Pencil); and non-preferred -- toy (peg, block, tinker toy), material (string, yarn, pipe cleaner), and things to do arts and crafts with (glue, paint, pen).

Stimulus objects included in this study were in the vocabulary of the subjects and capable of being verbalized by them. The conceptual categories, however, were formed by the experimenters rather than using existing pre-established categories because object groupings by previous researchers (e.g., Battig & Montague, 1969) were directed towards samples other than moderately and severely mentally retarded children.

Procedure

All 16 subjects were asked to learn the two types of items in two separate 15-20 minute sessions scheduled at least a week apart: the order of item presentation was counterbalanced. During both the preferred or non-preferred stimuli sessions, all 9 objects were displayed simultaneously with similar conceptual categories grouped adjacent to each other in front of each subject. The experimenter pointed to and verbally named each object in conjunction with its categorical label. In other words, each object was paired with the associate which was its categorical label. For example, in the preferred stimulus condition the subject was instructed verbally by the experimenter: "This is a raisin; raisin is food." After all objects had been presented once, these objects were covered and the subject was instructed to recall. The recall interval was subject-paced; when the subject stopped recalling, the subsequent trial commenced. After each trial, the subject was told he had done very well and was rewarded by bits of candy. There were a total of five trials.

Results and Discussion

The present study employed a 2 x 5 factorial design with repeated measures on both factors. The first factor was Stimulus Type, which consisted of two levels: preferred and non-preferred. The second factor was Trials which were five. The two dependent variables were the number of items correctly recalled and the adjusted ratio of clustering (ARC) scores. The ARC scores were derived according to the following formula (Gerjuoy & Spitz, 1966; Roenker, Thompson, & Brown, 1971):

$$ARC = \frac{O(R) - E(R)}{Max(R) - E(R)}$$

where O(R) is observed clustering or number of times the name of a stimulus object is followed by another stimulus object from the same category during recall, E(R) is the expected number of clusters (Bousfield & Bousfield, 1966), and Max(R) is the maximum number of clusters possible given the items recalled. The ARC measure has a maximum value of 1.00 which corresponds to perfect clustering. Table 1 presents the means and standard deviations of correct items recalled and ARC scores for both the preferred and non-preferred groups over the five trials.

Insert Table 1 about here

For number of correct items recalled, significant effects were found for Stimulus Type, F (1, 15) = 52.50, $p < .001$; Trials, F (4, 60) = 6.74, $p < .01$; and Stimulus Type x Trials, F (4,60) = 3.30, $p < .05$). These data indicated that with an optimal presentation method, subjects correctly recall significantly more items in the preferred stimulus condition than in the non-preferred stimulus condition. Furthermore, not only did recall scores differ as function of stimulus type, but they also improved over trials. In addition, there was an interaction between stimulus type and trials in their effects upon recall. That is, subjects in the preferred stimulus condition not only recalled more in the earlier trials, but their recall increased at a faster rate in comparison to the non-preferred stimulus condition. In fact, Trial 5 of the non-preferred stimulus condition did not differ significantly from Trial 1, and this suggests that item non-preference is more determining than practice effect which should have caused an increment in item recall. In general, these results indicate that stimulus materials which are preferred by the subjects have motivating effects that both stimulate learning and enhance recall.

On the other hand, an inspection of the data revealed that the subjects clustered very little; even by Trial 5, clustering averaged less than one word above chance for both the preferred and non-preferred stimulus conditions. Hence no further analysis of the clustering data was made. These results would suggest that clustering is not related to recall in moderately and severely retarded children. External organization of stimulus material thus does not appear beneficial for the subjects in the present study even when materials are structured and presented in a way that combined methods proven to be effective in inducing organizational tendencies in educable mentally retarded children.

One plausible explanation for the lack of any significant clustering over trials may be due to the fact that since the conceptual categories were not subject-determined, the subjects may have used different criteria and concepts in categorizing these items. In other words, although the stimulus materials were presented with external organization in accordance with categories determined by the experimenters, the subjects may have grouped them differently. Alternatively, the subjects may have been unable to utilize the experimenter-supplied categories because of their low mental age, which has been associated with low relationship between clustering and recall (Jablonski, 1974). In the present sample, with a mean IQ of 39.12, the low inferred mental age (approximate mean = 4.24) could have prevented the development and/or the perception of super-ordinate relations leading to organization by categorical labels.

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Table 1

Means and Stardard Deviations (SDs) of Number of Correct Items Recalled (CIR) and Adjusted Ratio of Clustering (ARC)

	Trial 1		Trial 2		Trial 3		Trial 4		Trial 5	
Condition	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Preferred										
CIR	3.38	1.61	4.00	1.80	4.31	1.99	4.38	1.72	5.50	1.80
ARC	-0.05	0.59	0.01	0.53	-0.05	0.62	0.09	0.34	0.07	0.55
Non-Preferred										
CIR	1.88	1.08	2.13	0.99	2.38	1.22	2.31	1.21	2.44	1.06
ARC	0.08	0.38	-0.02	0.36	-0.15	0.33	0.05	0.38	-0.02	0.49